

Dental Record Documentation in Selected Ambulatory Care Facilities

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Synopsis

Having recognized the differences in financial incentives between institutional providers and private practitioners participating in the Medicaid program, the New York State Health Department developed a streamlined mechanism of prior approval for 13 selected institutional providers of dental care. As part of the evaluation of this process, a retrospective audit of 316 dental records was conducted to assess the level of documentation present in

the dental record. A followup audit was conducted 3 months after implementation of a plan to correct any deficiencies identified.

More than 50 percent of the facilities were unable to present all the records requested at the time of the initial audit. Few of the audited records were free of deficiencies, and documentation of the results of the intra-oral examination was lacking in most facilities. The followup audit demonstrated statistically significant improvement in the level of record documentation.

These results demonstrate that, even when good recordkeeping procedures were identified and agreed to by these institutional dental providers, performance was inadequate. However, the study also demonstrates that adequate records can be kept if sufficient incentives are provided.

Efforts to evaluate retrospectively the delivery of dental care that are dependent on the dental record as a primary data source are unlikely to succeed unless incentives to encourage good recordkeeping are incorporated. Further research is needed to develop appropriate incentives that would operate in other practice settings.

NEW YORK STATE LAW MANDATES prior approval for certain dental procedures delivered under its Medicaid program. It defines prior approval as the evaluation of a plan of care and determination of the necessity and appropriateness of the proposed treatment. The mechanism requires providers to submit proposed plans of treatment, with appropriate documentation, to the State for review before the initiation of treatment. The State may approve the plan as submitted, seek further information from the provider or, through examination of the patient, suggest alternative services, or deny the plan.

Prior approval appears to be an effective cost control measure when applied to traditional fee-for-service providers. However, the current reimbursement system for ambulatory care facilities in New York is based on an all-inclusive cost-based rate for each visit so that each visit, regardless of services provided, generates the same revenue. Therefore, the economic incentives differ from those operating for fee-for-service providers.

Recognizing these differences and the inherent inefficiencies of the prior approval process, the Expedited

Prior Approval Process (EPAP), a streamlined mechanism of prior approval, was developed for 13 selected institutional providers of dental care in New York City to explore alternative methods of meeting the requirements of the law. EPAP was based on the existence of a greater number of external and internal controls of quality and a greater degree of standardization of recordkeeping procedures present in these institutions. The process allows the facility a somewhat freer hand in planning treatment for Medicaid recipients. At the same time the facility agrees to comply with detailed clinical recordkeeping requirements, to set specific criteria for treatment planning and a standard sequence of treatment, and to make patient records available for post-treatment evaluation.

The EPAP mechanism requires the facility to submit prior approval forms to the State for each patient receiving prior approved services, but it delegates to the facility primary responsibility for determining the appropriateness and necessity of services covered by Medicaid. The State assumes a more passive role and concentrates on periodic post-treatment review to verify the appropri-

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ateness of the care delivered. It thereby maintains some control over the procedures delivered while utilizing a less costly form of review. Since review is done retrospectively, the foundation of the EPAP is the existence and availability of sufficient documentation in the dental record to allow retrospective review of treatment planning.

To evaluate the effectiveness of the EPAP process, this study was designed to assess the availability and completeness of the dental record by means of a record audit.

Literature Review

It is generally acknowledged that the maintenance of complete and accurate dental records is an essential element of patient care (1-11). In addition to providing a permanent record of the treatment delivered, dental records form the foundation for careful diagnosis and treatment planning. Continuity of care depends upon the communication among providers furnished by the dental record (8), particularly in settings where several practitioners are providing care for the individual patient.

As early as 1922, efforts were being made to develop standards for recordkeeping in hospital dental services (12,13). In 1925, the American Dental Association's Department of Dental Health Education cited a survey of dental clinics in the metropolitan New York area that stated that records "in general are found to be poorly developed and unstandardized" (1). Hoffman (6), while outlining the justification for adequate dental records in the hospital setting, noted the impossibility of obtaining inpatient charts for outpatient use on short notice.

The legal requirements to maintain adequate dental records have been recognized (1,10). As reported by Pollack (10), a New York court ruled that a physician's license had been properly suspended for keeping insufficient patient records. The court found that inadequate records fail to meet the intent of the legal requirement "to maintain records that reflect the evaluation and treatment of the patient."

It has also been recognized that the maintenance of complete and accurate records is a prerequisite for the assessment of the quality of care delivered, and such records provide a basis for the evaluation of the outcome of treatment (9,14-16). The problem of the validity of the medical history recorded in the dental record has been documented (14,17), and indications of other dental record deficiencies have been noted (8,14,18,19).

Many quality assessment and assurance systems have been proposed using the dental record as one source of data (4,5,15,16,18-22). More recently, Orlowski (23), Demby and Rosenthal (19), and Gotowka and coworkers (5) developed quality assurance systems that rely heavily on the patient's dental record to assess the appropriateness and quality of the care delivered. However, only an unpublished study by Kift, Reiffe, and Jerge, "Study of Dental Patient Records in Randomly Selected Dental Offices in Philadelphia and Vicinity," has attempted to evaluate quantitatively the completeness of the dental record. In their study of records from randomly selected dental offices, they found that documentation of certain elements of the dental record was lacking. Patient's name, radiographic evaluation, and notation of services rendered were found in 90 percent or more of the records, and 50-70 percent of the records contained information on the patient's age, a completed dental chart, and notations on dental caries. However, at least 50 percent of the records surveyed failed to include the following elements:

- treatment plan;
- adequate health history;
- dental history;
- explicit statement of diagnosis;
- periodontal evaluation;
- patient's sex;
- status of existing restorations;
- physical examination data;
- evaluation of oral structures.

Methods

Sample. A sample of 360 patients was selected from all prior approval requests submitted to the State during the first year of EPAP operation. Sample size was limited by the number of record reviews that could be completed in approximately 4 weeks of full-time-equivalent examiner time. The number of records requested from each facility was in proportion to its total volume of prior approval requests received during the year, with a minimum of 10 records selected from each facility. After eliminating records based on requests for procedures that did not require approval and for patients ineligible for

Criteria used in evaluation of dental record elements

Record element	Criteria
Demographic data	Sufficient data to clearly identify the individual.
Medical history:	
Presence	Medical summary in dental record even when dental record is part of overall health record.
Reviewed by dentist	Evidence that a dentist has reviewed the history with the patient.
Deviation from normal recognized	Presence of information about factors that would influence treatment planning or way in which care is delivered.
Appropriate updating.	Evidence of updating at the beginning of each new course of treatment or yearly, whichever is more frequent.
Intra-oral examination:	
Charting	Charting of all teeth for their presence or absence and carious lesions by surface.
Periodontal evaluation	Evidence that an evaluation of the condition of the periodontium has been completed.
Oral hygiene evaluation	Evidence that an evaluation of the patient's oral hygiene status has been completed.
Edentulous areas	For patients undergoing prosthodontic treatment, evidence that an evaluation of the edentulous areas has been completed.
Existing prosthesis.	For patients undergoing prosthodontic treatment, evidence that an evaluation of the existing prosthesis has been completed.
Radiographic examination.	Presence of adequate radiographs to support the diagnostic process.
Treatment plan	Clearly defined treatment plan that presents an orderly, logical sequence of care.
Progress notes	Presence of legible, dated, and signed progress notes for each visit.

' . . . the maintenance of complete and accurate records is a prerequisite for the assessment of the quality of care delivered, and such records provide a basis for the evaluation of the outcome of treatment.'

Medicaid services, a final sample of 316 patient records remained.

Individual patients were selected from the State's prior approval file at an interval determined by the formula $TP \div SP = i$, where TP is the total approval requests submitted by the facility during the audit period, SP is the number of the facility's records to be included in the sample, and i the interval or count at the end of which a prior approval request was selected from the file for that facility.

Audit. At least 1 week in advance of the audit, the dental director of each facility received written notification of the audit date and a list of names and Medicaid identification numbers of patients whose records would be reviewed. The dental director or his representative was asked to be available during the audit to help acquaint the auditors with the facility's dental records and to answer questions.

Instrument. The audit instrument was designed to assess the presence and adequacy of 13 elements of the dental record. The box at left lists the record elements assessed and the criteria used in the evaluation. The instrument was based on the clinical record requirements previously agreed to by each facility. The instrument was pretested in two nonparticipating facilities and the necessary modifications were made.

Three State-employed public health dentists familiar with the requirements of participation were trained for 2 days in the use of the instrument. Explicit decision-making criteria were developed during group review of selected records. Inter-examiner reliability, measured at the end of the training period and several times during the audit process, ranged from 75 to 100 percent agreement for individual record elements.

Post-correction audit. After a preliminary analysis of the results of the audit, each facility was notified of any deficiencies, and a plan to correct them was requested. Three months after the implementation of the plan, the

audit was repeated on a sample of records taken from prior approval forms submitted during the 3-month period. The same proportional sampling method was used, and 92 patient records were selected for audit. One of the original auditors completed the followup audit. Because such a small sample was obtained, only aggregate data are presented for the followup audit.

Results

Table 1 presents data on the availability of complete dental records at the time of the initial audit. A record was listed as available if any identifiable portion of it was present at the time of the audit, and it was listed as available and complete if all elements of the facility's normal record package were present and accompanied by the radiographs taken. While approximately 91 percent of the requested records were available and complete, only five facilities were able to produce complete records for all patients, and two facilities were able to produce complete records for less than 80 percent of the patients requested.

Each facility's recordkeeping system was classified according to the location of the record—either as a part of the general medical record or as a separate dental clinical record. Facilities that maintain a separate dental record were able to produce complete records for 92.1 percent of those requested, while facilities that incorporate the dental record into the general medical record were able to produce 81.1 percent of those requested. This difference was statistically significant at the 0.05 level, using a chi-square test with 1 degree of freedom.

Tables 2 to 4 present the evaluations of each element of the dental record. Demographic information was nearly always sufficient. It was present in 89.6 percent of all records, and seven facilities provided this information on all of the records requested. The extent to which other information was available was as follows: an adequate radiographic examination, 82.3 percent of the time; a sequential treatment plan, 85.7 percent; and dated and signed progress notes, 83.2 percent.

The elements of the medical history were less well recorded. Four facilities were rated at least 90 percent for all elements of the medical history; five were consistently below 90 percent; and at one facility only 10 percent of the dental records contained a separate, identifiable medical history (table 3).

The recording of the results of the intra-oral examinations was present in less than 80 percent for each element (table 4). Evidence of a periodontal evaluation was present for 65.2 percent of the patients. For patients who were scheduled to have a replacement prosthesis constructed, only 71.5 percent of the records made any mention of the condition of the existing prosthesis.

Table 5 gives the percentage of record elements found deficient in each facility (13.8 percent overall), the proportion of records with no deficient elements (19.3 percent), and the proportion of records with four or more deficient elements (22.2 percent).

Table 6 presents the results of the post-correction audit and compares them with the results of the initial audit. Improvement was evident in the recording of all elements of the dental record. The differences were tested by using chi-square tests and found to be statistically significant at

Table 1. Availability of records by method of storage

Facility	Number requested	Available		Available and complete	
		Number	Percent	Number	Percent
Records stored separately..	126	¹ 119	94.4	² 116	92.1
01.....	66	59	89	59	89
02.....	10	10	100	10	100
03.....	20	20	100	17	85
04.....	10	10	100	10	100
07.....	10	10	100	10	100
11.....	10	10	100	10	100
Combined record storage ..	190	¹ 169	88.9	² 154	81.1
05.....	40	38	95	37	92.5
06.....	20	19	95	17	85
08.....	10	9	90	9	90
09.....	20	16	80	16	80
10.....	10	10	100	10	100
12.....	40	40	100	31	77.5
13.....	50	37	74	34	68
All records.....	316	288	91.1	270	85.4

¹ χ^2 (df = 1) = 2.9, $P > .05$ no significant difference between methods of storage.

² χ^2 (df = 1) = 7.3, $P < .05$ significant difference between methods of storage.

Table 2. Percentage of clinical record elements judged to be adequate¹

Facility	Demographic data	Radiographic examination	Treatment plan	Progress notes
01.....	89.4	86.4	89.4	87.9
02.....	100	100	100	100
03.....	100	100	100	85.0
04.....	100	100	80.0	100
05.....	92.5	87.5	92.5	92.5
06.....	90.0	70.0	65.0	70.0
07.....	100	80.0	100	100
08.....	90.0	80.0	90.0	70.0
09.....	75.0	60.0	70.0	70.0
10.....	100	100	100	80
11.....	100	80.0	100	100
12.....	100	92.5	90.0	87.5
13.....	70	62.0	70.0	64.0
All records.....	89.6	82.3	85.7	83.2

¹ All elements of unavailable records judged inadequate.

the 0.05 level for all elements except for the recording of demographic data.

Discussion

The operation of the EPAP is dependent on a retrospective audit which, in turn, is dependent on the availability of complete records for evaluation. The participating facilities were selected on the basis of their reputation as high quality providers of dental care within the various institutional categories. Thus, they would be the most likely to adhere to the required standards of clinical recordkeeping.

Table 3. Percentage of elements of the medical history judged to be adequate¹

Facility	Present	Reviewed by a dentist	Deviation recognized	Appropriate updates
01	89.4	86.4	86.4	78.8
02	100	100	100	100
03	90.0	75.0	85.0	80.0
04	90.0	60.0	50.0	90.0
05	92.5	92.5	95.0	95.0
06	75.0	75.0	75.0	45.0
07	10.0	10.0	10.0	10.0
08	80.0	80.0	80.0	90.0
09	80.0	75.0	75.0	35.0
10	100	100	100	100
11	90.0	90.0	10.0	90.0
12	100	95.0	100	95.0
13	74.0	66.0	72.0	66.0
All records	85.1	80.7	83.9	75.9

¹ All elements of unavailable records judged inadequate.

Table 4. Percentage of elements of the intra-oral examination judged to be adequate¹

Facility	Charting	Periodontal evaluation	Oral hygiene evaluation	Evaluation of—	
				Edentulous areas	Existing prosthesis
01	89.4	65.2	57.6	53.0	77.3
02	100	100	100	100	100
03	100	60.0	65.0	45.0	75.0
04	100	90.0	90.0	10.0	50.0
05	62.5	30.0	25.0	77.5	90.0
06	55.0	50.0	40.0	70.0	60.0
07	50.0	60.0	30.0	90.0	70.0
08	90.0	60.0	90.0	20.0	30.0
09	80.0	70.0	70.0	30.0	40.0
10	100	90.0	90.0	50.0	40.0
11	90.0	70.0	70.0	40.0	70.0
12	95.0	80.0	72.5	92.5	85.0
13	74.0	72.0	72.0	60.0	68.0
All records	78.8	65.2	61.7	61.1	71.5

¹ All elements of unavailable records judged inadequate.

In this study, the records were selected from those patients scheduled to receive Medicaid prior-approved services. Since the procedures that require prior approval are, by definition, among the more complicated and time consuming, the patients concerned would have been expected to have gone through the normal diagnostic procedures, and they would have a complete dental record. However, only 5 of the 13 facilities were able to produce all of the records requested. Since the facilities were given at least 1 week to locate the records, given shorter notice they would be even less likely to produce a given dental record. Therefore, if a patient undergoing comprehensive treatment had an emergency problem, the findings show that there is some probability that relevant medical and dental history data would not be available to guide the provider in the delivery of emergency treatment. This finding has implications for the delivery of inappropriate treatment and the continuity of care delivered.

The format, filing and retrieval, and thoroughness of the dental records of the participating facilities varied over an extremely wide range. The major difference was that some facilities included the dental records as part of the medical records stored in a central records department. The split was nearly even, and six facilities maintained separate dental records while seven others incorporated the dental records into the medical records. Although the dental records are available to other health care providers when they are part of the general medical record, the audit showed that they are more easily retrieved when they are kept separate. Of the five facilities that were able to produce all the records requested, only one maintained the dental record as part of the general

Table 5. Record elements judged deficient¹

Facility	Number of records requested	Percent of total elements deficient ²	Percent of records deficiency free	Percent with 4 or more elements deficient
01	66	20.3	24.2	18.2
02	10	0.0	100	0.0
03	20	20.0	0.0	45.0
04	10	20.0	0.0	30.0
05	40	21.2	5.0	25.0
06	20	35.0	15.0	65.0
07	10	45.0	0.0	90.0
08	10	25.4	0.0	30.0
09	20	35.8	10.0	45.0
10	10	10.0	30.0	0.0
11	10	15.0	40.0	30.0
12	40	8.0	45.0	10.0
13	50	31.5	6.0	34.0
All records	316	13.8	19.3	22.2

¹ All elements on missing records judged deficient.

² Total elements = number of records × 13 elements.

'While approximately 91 percent of the requested records were available and complete, only five facilities were able to produce complete records for all patients, and two facilities were able to produce complete records for less than 80 percent of the patients requested.'

medical record. Since records are of no value unless they are available when needed, the advantage of having dental records available by making them part of a separate dental records file seems to outweigh the advantage of centralizing all records. However, it should be noted that the dental department usually does not have full control over the disposition of its records.

It was not surprising to find that adequate demographic information was almost always available in light of the need to have it for reimbursement purposes.

However, a summary of the medical history—information that is essential before significant dental treatment can be started—was not always a part of the dental record. Available even less often was an appropriate updating of the medical history. Because it is assumed

that the population served by these facilities tends to be in poorer health than the rest of the population, yearly updating of the medical history would seem to be a minimal requirement.

The lack of documentation of the oral hygiene and periodontal status for patients receiving significant levels of restorative and prosthetic treatment is disturbing. Few would dispute the importance of a careful evaluation and subsequent treatment of the periodontium; however, given the lack of adequate evaluation, it appears that the institutional providers are not immune to a temptation to provide restorative or prosthetic treatment without careful consideration of the patient's periodontal condition.

Documentation of the evaluation of edentulous areas over which prostheses are to be placed is a necessary element of the intra-oral examination. It is required to encourage the provider to document problem areas that can affect the success of the proposed prosthesis. Since evaluation of the edentulous area is essential to the construction of a prosthesis, the lack of such documentation at most facilities is a concern that calls for further investigation.

Given the economic incentives to replace prostheses, it is reasonable to assume that those not scheduled for replacement are adequate. However, for those prostheses proposed for replacement, lack of documented evaluations of the existing prostheses raises speculation that some of the replacements are unnecessary.

Table 6. Comparison of results of initial audit with post-correction audit

Criteria	Initial audit		Post correction audit		χ^2 value
	Number	Percent	Number	Percent	
Availability of records:					
Requested	316	100	92	100	
Available	288	91.1	90	97.8	¹ 4.8
Available and complete	270	85.4	90	97.8	² 10.9
Clinical record elements:					
Demographic data	283	89.6	86	93.5	1.4
Radiographic examination	260	82.3	88	95.7	² 11.0
Treatment plan	271	85.8	91	98.9	² 17.4
Progress notes	263	83.2	91	98.9	² 14.9
Elements of medical history:					
Present	269	85.1	89	96.7	¹ 8.2
Reviewed by a dentist	255	80.7	90	97.8	² 15.5
Deviation from normal recognized	265	83.9	89	96.7	² 10.0
Updated appropriately	240	75.9	86	93.5	² 12.8
Elements of intra-oral examination:					
Charting	249	78.8	86	93.5	² 9.8
Periodontal evaluation	206	65.2	83	90.2	² 21.9
Oral hygiene evaluation	195	61.7	84	91.3	² 28.6
Evaluation of edentulous areas	193	61.1	86	93.5	² 34.1
Evaluation of existing prosthesis	226	71.5	86	93.5	¹ 19.9
Overall:					
Deficient elements	569	15.2	61	5.1	² 67.6
No deficient elements	61	19.3	54	58.7	² 54.4
Over 3 deficient elements	64	20.3	4	4.3	² 12.5

¹ $P < .05$. ² $P < .01$.

The radiographic examinations completed were generally considered to be adequate; however, missing radiographs made it difficult to make assessments in some cases. Because factors such as the number of providers, auxilliary personnel, and patients involved in these facilities increase the possibility of misplacing radiographs, office procedures to minimize this risk must be developed.

Some semblance of a sequential treatment plan was evident in most of the records. At one facility, however, a significantly lower proportion of the audited records contained an identifiable treatment plan.

At the completion of the original audit, the facilities' dental directors were informed that continued participation in the EPAP was contingent upon the correction of all deficiencies identified. The improvement in documentation for all elements of the record during the post-correction audit demonstrates that adequate records can be kept if there is sufficient incentive to do so. Missing data from the two facilities unavailable for the followup audit may reduce the level of improvement observed, but since documentation improved dramatically in each facility reviewed, it is assumed that the missing data would have little effect on the overall outcome. Most facilities appear to value participation in EPAP enough to be willing to change recordkeeping practices. However, the results of this study indicate that periodic reaudits are necessary to maintain the desired levels of documentation.

The recordkeeping deficiencies at the facilities in this study demonstrate any post-treatment assessment of dental care that depends on the clinical record as the primary data source may be doomed to failure unless incentives for good recordkeeping are built into the system. This study documents deficiencies that previously had only been assumed to exist at some level in all types of practice settings. Although no adverse outcomes directly attributable to these deficiencies were observed, it is easy to imagine how the deficiencies can contribute to the delivery of inappropriate care. Once again, these facilities were selected because of their reputation for quality care and because many of them are well known and respected as teaching facilities. Therefore it is unlikely that better systems of dental recordkeeping would be found at less prestigious facilities.

The apparent disregard of the principles of adequate recordkeeping seem to frustrate not only the efforts of dental educators, but also the advice of legal experts who continually stress the importance of complete records as the best defense against malpractice claims. Since all dentists have been informed of the importance of adequate recordkeeping, existing incentives are insufficient to encourage dentists to apply this knowledge. If good recordkeeping is an essential part of quality dental care,

then suitable incentives must be developed to encourage practitioners and the facilities to maintain high standards.

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Development and Evaluation of a Community Cancer Resource Directory

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Emily Pasterfield and Frances Holt, Cancer Control Program, Johns Hopkins Oncology Center, assisted in compiling the directory.

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Synopsis

The Frederick Cancer-Related Resource Directory was developed in response to the community's need to be informed about available services for cancer patients. A

1-year followup and evaluation was conducted to determine what changes or corrections were needed in the text of the directory and if the objectives of the project had been met. The evaluation survey of the listed resources revealed that a large number of changes in the directory were required. Seventy-eight percent of the respondents replied that at least one change was required in their entry. The followup also revealed that 16 percent of the listed resources knew of at least one referral that they received as a result of the directory listing.

The survey of directory recipients indicated that 27 percent of the private practice physicians and 61 percent of the other health-related service providers who have a directory have used it or read through it. Approximately 64 percent of the users have provided clients or patients with information from the directory. Almost half of all respondents replied that, as a result of the directory listing, they had developed closer working relationships with at least one other cancer-related service organization, although the percentage was considerably higher for health-related service providers (51.2 percent) than for private physicians (27.3 percent). More than half of the respondents (58 percent) believed that a simpler directory should be made available to patients instead of or in addition to the providers' directory.

Members of the project's multiagency committee became much more aware of the wide variety of cancer patients' needs and available resources. The most beneficial aspect of the project for them was the opportunity to work with persons from other agencies and to develop closer, long-term relationships.

CANCER PATIENTS, AS WELL AS other chronically ill persons, need many health-related and social services resources. Typically, these people rely on family, friends, and their physicians to help them meet their needs. The patient, family, and physician may also seek assistance from other health care and social service providers. All of these people recognize their need to know about and make efficient use of available community services. Yet it is extremely difficult to be knowledgeable about cur-

rent particulars of these services and such information as eligibility requirements, contact persons, and hours of service.

Methods most commonly used to remain informed about community services are telephone hotlines, community or interagency councils, and resource directories. However, there is a lack of knowledge regarding utilization of these methods and their effectiveness in meeting the need to be informed.